

Notice of Allowability

Application No.

10/084,641

Examiner

Wesley D. Markham

Applicant(s)

IKEDA ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the RCE of 9/16/2005 and amendment of 8/22/2005.
2. ☒ The allowed claim(s) is/are 1, 4 and 5.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

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DETAILED ACTION / ALLOWANCE

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application on 9/16/2005 after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action (i.e., the final Office action mailed on 5/23/2005) has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/22/2005 has been entered.

Response to Amendment

2. Acknowledgement is made of the amendment filed by the applicant on 8/22/2005, in which the specification of the instant application was amended, one (1) replacement sheet of drawings was submitted, independent Claim 1 was amended, and Claims 2, 3, and 30 were canceled. **Claims 1, 4, and 5** remain pending in U.S. Application Serial No. 10/084,641, and an Office action on the merits follows.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d) (i.e., a certified copy of Japanese priority document 2001-056693), which papers have been placed of record in the file.

Drawings

4. The drawings filed on 2/27/2002, 2/24/2005 (i.e., one replacement sheet depicting Figures 14A – 14C), and 8/22/2005 (i.e., one replacement sheet depicting Figure 8) are acknowledged and approved by the examiner.

Specification

5. The objection to the specification set forth in paragraph 5 of the previous Office action is withdrawn in light of the applicant's amendment to delete the previously added new matter from the disclosure.

Allowable Subject Matter

6. **Claims 1, 4, and 5** are allowed.
7. The following is an examiner's statement of reasons for allowance:

Independent Claim 1, from which Claims 4 and 5 depend, is drawn to a method of manufacturing an optical device. The claimed method generally requires (1) coating a substrate with a resin thin layer, the temperature of the resin thin layer being controlled to be lower than the temperature at which polymerization begins so that the resin is not substantially polymerized, (2) polymerizing the resin thin layer on the substrate to form a resin thin film by heating the resin thin layer to a temperature higher than the polymerization reaction starting temperature and higher than the glass-transition temperature but lower than the thermal decomposition temperature of the resin, (3) pressing a stamp a plurality of times against the resin thin film to produce a

micro-asperity pattern on the surface of the resin thin film, (4) cooling the resin thin film to a temperature lower than the glass transition temperature, (5) separating the stamp from the film, and (6) baking an alignment film on the resin thin film at a temperature below the glass transition temperature of the resin thin film to prevent the aforementioned micro-asperity pattern from losing shape. The closest prior art of record is Funahata et al. (US 2002/0054259 A1), which teaches a method for manufacturing an optical device, specifically an LCD reflection plate, the method comprising the steps of coating a substrate "1" with a resin thin layer "2", drying the resin thin layer, pressing a stamp "19" or "21" having an "inverted micro-asperity pattern" against the resin thin layer such that a micro-asperity pattern is formed on a surface of the resin thin layer, separating the stamp from the resin thin layer, and forming a reflection film "3" and an alignment film "9" on the resin layer having the micro-asperity pattern thereon. However, the process of Funahata et al. merely dries the resin prior to stamping (i.e., does not (a) polymerize the resin thin layer on the substrate to form a resin thin film by heating the resin thin layer to a temperature higher than the polymerization reaction starting temperature and higher than the glass-transition temperature but lower than the thermal decomposition temperature of the resin and (b) stamp the polymerized resin thin film) and then hardens the stamped / patterned resin layer in an oven. Additionally, there is no teaching or suggestion in Funahata et al. to bake the alignment film at all, much less at a temperature below the glass transition temperature of the resin thin film to prevent the previously

formed micro-asperity pattern from losing shape. While Michel et al. (USPN 5,759,616) teaches that the temperature at which a resin is polymerized influences the resulting strength of the layer, Tanaka (JP 03-149803 A) teaches that a specific epoxy resin paste can be cured above its glass transition temperature, and Corley (USPN 5,338,782) teaches post-curing a resin below its degradation temperature, there is no suggestion or motivation to polymerize a resin thin layer on a substrate to form a resin thin film by heating the resin thin layer to a temperature higher than the polymerization reaction starting temperature and higher than the glass-transition temperature but lower than the thermal decomposition temperature of the resin and stamp the thus polymerized resin thin film in the context of the applicant's claimed method of manufacturing an optical device in which an alignment film is baked at a temperature below the glass transition temperature of the resin thin film to prevent the previously formed micro-asperity pattern from losing shape. Chen et al. (USPN 6,228,463) teaches a method comprising depositing a resin film on a substrate, curing the film by heating to a given curing temperature, and then mechanically embossing the film after (re)heating the film to a temperature sufficient to soften the film, and Pricone et al. (USPN 4,486,363) teaches that a resin film should be heated to a temperature higher than its glass transition temperature during a stamping / embossing step. However, neither of these references teaches or suggests actually polymerizing the resin by heating the resin to a temperature higher than the polymerization reaction starting temperature and higher than the

glass-transition temperature but lower than the thermal decomposition temperature of the resin (i.e., reheating the resin to soften it and stamp it after curing is not the same as, and does not render obvious, actually curing the resin by heating above the glass transition temperature as required by the claims). Additionally, neither of these references teaches or suggests using the embossing process in the context of manufacturing an optical device in which an alignment film is baked at a temperature below the glass transition temperature of the resin thin film to prevent the micro-asperity pattern from losing shape. For the above reasons, the prior art of record does not teach or reasonably suggest performing the method claimed in Claims 1, 4, and 5, and these claims are allowed.

8. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley D. Markham whose telephone number is (571) 272-1422. The examiner can normally be reached on Monday - Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on (571) 272-1423. The fax

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phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


WDM

Wesley D Markham
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Art Unit 1762


TIMOTHY MEEKS
SUPERVISORY PATENT EXAMINER